Examiner-Initiated Interview Summary	Application No.	Applicant(s)	
	09/427,775	KIDD ET AL.	
	Examiner	Art Unit	
	Marianne L. Padgett	1762	

All Participants:

(1) *Marianne L. Padgett*.

(2) *George Wang*.

Status of Application: *After final*

(3) _____.

(4) _____.

Date of Interview: *8 March 2007*

Time: *Afternoon*

Type of Interview:
- ☒ Telephonic
- ☐ Video Conference
- ☐ Personal (Copy given to: ☐ Applicant ☐ Applicant's representative)

Exhibit Shown or Demonstrated: ☐ Yes ☒ No
If Yes, provide a brief description:

Part I.

Rejection(s) discussed:
NA

Claims discussed:
NA

Prior art documents discussed:
NA

Part II.

SUBSTANCE OF INTERVIEW DESCRIBING THE GENERAL NATURE OF WHAT WAS DISCUSSED:
See Continuation Sheet

Part III.

☒ It is not necessary for applicant to provide a separate record of the substance of the interview, since the interview directly resulted in the allowance of the application. The examiner will provide a written summary of the substance of the interview in the Notice of Allowability.

☐ It is not necessary for applicant to provide a separate record of the substance of the interview, since the interview did not result in resolution of all issues. A brief summary by the examiner appears in Part II above.

MARIANNE PADGETT
PRIMARY EXAMINER

(Examiner/SPE Signature) (Applicant/Applicant's Representative Signature – if appropriate)

Continuation of Substance of Interview including description of the general nature of what was discussed:

A message was left for Mr. Wang concerning formal drawings indicated by a paper submitted 1/7/2002, to have been submitted on that date, but not found in the scanned file. The examiner indicated that the scanning contractors have been requested to look for the missing papers, but that there is no guarantee that they will be found, so that they can be scanned the file, hence the applicants may wish to resubmit the replacement sheets of formal drawings for figures 1-6, with an appropriate cover letter in order to insure printing of the replacement drawings up the figures by the printers.

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	09/427,775	KIDD ET AL.	
	Examiner	Art Unit	
	Marianne L. Padgett	1762	

All participants (applicant, applicant's representative, PTO personnel):

(1) *Marianne L. Padgett*. (3)_____.

(2) *George Wang*. (4)_____.

Date of Interview: *07 March 2007*.

Type: a)☒ Telephonic b)☐ Video Conference
c)☐ Personal [copy given to: 1)☐ applicant 2)☐ applicant's representative]

Exhibit shown or demonstration conducted: d)☐ Yes e)☒ No.
If Yes, brief description: _____.

Claim(s) discussed: *Proposed attached claims, faxed 3/7/2007*.

Identification of prior art discussed: *NA*.

Agreement with respect to the claims f)☒ was reached. g)☐ was not reached. h)☐ N/A.

Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments: *See Continuation Sheet*.

(A fuller description, if necessary, and a copy of the amendments which the examiner agreed would render the claims allowable, if available, must be attached. Also, where no copy of the amendments that would render the claims allowable is available, a summary thereof must be attached.)

THE FORMAL WRITTEN REPLY TO THE LAST OFFICE ACTION MUST INCLUDE THE SUBSTANCE OF THE INTERVIEW. (See MPEP Section 713.04). If a reply to the last Office action has already been filed, APPLICANT IS GIVEN A NON-EXTENDABLE PERIOD OF THE LONGER OF ONE MONTH OR THIRTY DAYS FROM THIS INTERVIEW DATE, OR THE MAILING DATE OF THIS INTERVIEW SUMMARY FORM, WHICHEVER IS LATER, TO FILE A STATEMENT OF THE SUBSTANCE OF THE INTERVIEW. See Summary of Record of Interview requirements on reverse side or on attached sheet.

MARIANNE PADGETT
PRIMARY EXAMINER

Examiner Note: You must sign this form unless it is an Attachment to a signed Office action.

Examiner's signature, if required

Summary of Record of Interview Requirements

Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record
A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews
Paragraph (b)
In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for reply to Office action as specified in §§ 1.111, 1.135. (35 U.S.C. 132)

37 CFR §1.2 Business to be transacted in writing.
All business with the Patent or Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

The action of the Patent and Trademark Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews.

It is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability.

Examiners must complete an Interview Summary Form for each interview held where a matter of substance has been discussed during the interview by checking the appropriate boxes and filling in the blanks. Discussions regarding only procedural matters, directed solely to restriction requirements for which interview recordation is otherwise provided for in Section 812.01 of the Manual of Patent Examining Procedure, or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below. Where the substance of an interview is completely recorded in an Examiners Amendment, no separate Interview Summary Record is required.

The Interview Summary Form shall be given an appropriate Paper No., placed in the right hand portion of the file, and listed on the "Contents" section of the file wrapper. In a personal interview, a duplicate of the Form is given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephone or video-conference interview, the copy is mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner is not likely before an allowance or if other circumstances dictate, the Form should be mailed promptly after the interview rather than with the next official communication.

The Form provides for recordation of the following information:
- Application Number (Series Code and Serial Number)
- Name of applicant
- Name of examiner
- Date of interview
- Type of interview (telephonic, video-conference, or personal)
- Name of participant(s) (applicant, attorney or agent, examiner, other PTO personnel, etc.)
- An indication whether or not an exhibit was shown or a demonstration conducted
- An identification of the specific prior art discussed
- An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). Note: Agreement as to allowability is tentative and does not restrict further action by the examiner to the contrary.
- The signature of the examiner who conducted the interview (if Form is not an attachment to a signed Office action)

It is desirable that the examiner orally remind the applicant of his or her obligation to record the substance of the interview of each case. It should be noted, however, that the Interview Summary Form will not normally be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview.

A complete and proper recordation of the substance of any interview should include at least the following applicable items:
1) A brief description of the nature of any exhibit shown or any demonstration conducted,
2) an identification of the claims discussed,
3) an identification of the specific prior art discussed,
4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the Examiner,
5) a brief identification of the general thrust of the principal arguments presented to the examiner,
   (The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he or she feels were or might be persuasive to the examiner.)
6) a general indication of any other pertinent matters discussed, and
7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicant's record of the substance of an interview. If the record is not complete and accurate, the examiner will give the applicant an extendable one month time period to correct the record.

Examiner to Check for Accuracy

If the claims are allowable for other reasons of record, the examiner should send a letter setting forth the examiner's version of the statement attributed to him or her. If the record is complete and accurate, the examiner should place the indication, "Interview Record OK" on the paper recording the substance of the interview along with the date and the examiner's initials.

Continuation of Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments:

The attached proposal was discussed, and it was noted that the heating step of the independent claims required clarification with respect to first & second depositant & relating the plated threaded surface to the inwardly & outwardly facing surfaces. Also amendments to dependence of various dependent claims due to cancellation of claims & canceling of some dependent claims due to inclusion of their limitations in the independent claims, as well as the need to amend dependent claims to correctly refer to first & second depositants, plus first & second evaporation sources, or the like. A modified version of the proposed amendment was was faxed, found to have all the needed changes, hence was employed as the examiner's amendment in an Appendix to the notice of allowance..

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	09/427,775	KIDD ET AL.	
	Examiner	Art Unit	
	Marianne L. Padgett	1762	

All Participants:

(1) *Marianne L. Padgett*.

(2) *George Wang*.

Status of Application: *After final*

(3) _____.

(4) _____.

Date of Interview: *6 March 2007*

Time: *??????*

Type of Interview:
- ☒ Telephonic
- ☐ Video Conference
- ☐ Personal (Copy given to: ☐ Applicant ☐ Applicant's representative)

Exhibit Shown or Demonstrated: ☐ Yes ☒ No
If Yes, provide a brief description:

Part I.

Rejection(s) discussed:
NA

Claims discussed:
Those of record particularly 1& 129

Prior art documents discussed:
NA

Part II.

SUBSTANCE OF INTERVIEW DESCRIBING THE GENERAL NATURE OF WHAT WAS DISCUSSED:
See Continuation Sheet

Part III.

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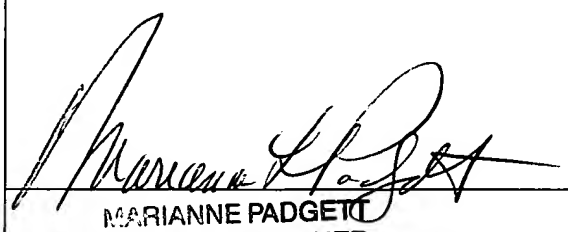

MARIANNE PADGETT
PRIMARY EXAMINER

(Examiner/SPE Signature) (Applicant/Applicant's Representative Signature – if appropriate)

Continuation of Substance of Interview including description of the general nature of what was discussed:
Discussed after final amendment of 2/14/2007, where the examiner noted that the proposed amendment only added part of the configuration of allowed claims 151, and the examiner proposed language for these claims, which would provide the rest of the relavent configuratiopn. Applicant's representative agreed to & FAXed a new listing of the claims, which would incorporate these changes in the claims.

Attachment to Interview Summary of 3/7/07

HUNTON & WILLIAMS

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FAX 202 • 778 • 2201

FAX

TO	NAME	Examiner Marianne Padgett
	FIRM	USPTO
	FAX NO.:	571-273-1423
	PAGES (INCLUDING COVER):	18
FROM	NAME:	George Wang
	DIRECT DIAL:	(202) 955-1960
	DIRECT FAX:	100
MESSAGE		URGENT: PLEASE CALL WHEN RECEIVED TO DISCUSS (App. No. 09/427,775)

IF PROBLEM WITH TRANSMISSION, PLEASE CONTACT THE SENDER AT THE NUMBER LISTED ABOVE

FAX ID :	02145EE7EBC7DC8
DATE:	Wednesday, March 07, 2007
TIME:	8:58:30 AM
CLIENT/MATTER NO.:	88742.472005

Attachment to interview Siemmay of 3/7/2007

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PROPOSED AMENDMENTS TO THE CLAIMS

DO NOT ENTER

1. (Currently Amended) A method for plasma plating comprising:

positioning a substrate with a threaded surface on a platform within a vacuum chamber, wherein an inwardly facing surface of the substrate faces a center of the platform and an outwardly facing surface of the substrate faces an edge of the platform and wherein the platform further comprises a turntable operable to rotate the substrate;

positioning a first depositant in ~~an~~ a first evaporation source within the vacuum chamber, the first depositant includes at least a first metal;

positioning a second depositant in a second evaporation source within the vacuum chamber, wherein the first evaporation source and second evaporation source are arranged so that rotation of the turntable moves the inwardly facing surface of the substrate past the first evaporation source at a first time and the outwardly facing surface of the substrate past the second evaporation source at a second time;

reducing an initial pressure in the vacuum chamber to at or below 4 milliTorr;

flowing a gas through the vacuum chamber at a rate to raise the pressure in the vacuum chamber to at or between 0.1 milliTorr and 4 milliTorr;

applying a negative dc signal to the substrate at a voltage amplitude at or between one to 1,500;

applying a radio frequency signal to the substrate at a power level at or between 1 watt and 50 watts; and

heating the depositant to a temperature at or above the melting point of the depositant, whereby a plasma is generated in the vacuum chamber, the plasma includes a mixture of positively charged depositant ions and

negatively charged electrons, and the depositant ions are plated on the threaded surface of the substrate to create a plated threaded surface, the inwardly facing surface and the outwardly facing surface of the substrate ~~to create plated surfaces~~, and wherein the plated threaded surface reduces galling between the plated threaded surface and a surface of a mated component.

2. (Previously Presented) The method of Claim 1, wherein the initial pressure is reduced in the vacuum chamber to at or below 1.5 milliTorr, and wherein gas is flowed through the vacuum chamber at a rate to raise the pressure in the vacuum chamber to at or between 0.5 milliTorr and 1.5 milliTorr.

3. (Previously Presented) The method of Claim 1, wherein the negative dc signal is applied to the substrate at a voltage amplitude at or between negative 500 volts and negative 750 volts.

4. (Previously Presented) The method of Claim 1, wherein the power level is provided at or between 5 watts and 15 watts.

5. (Previously Presented) The method of Claim 1, wherein the power level is around 10 watts.

6. (Canceled)

7. (Previously Presented) The method of Claim 1, wherein the initial pressure is reduced in the vacuum chamber to at or below 1.5 milliTorr, and the gas is flowed through the vacuum chamber at a rate to raise the pressure in the vacuum chamber to at or between 0.5 milliTorr and 1.5 milliTorr, wherein a negative dc signal is applied to the substrate at a voltage amplitude at or between negative 500 volts and negative 750 volts, and wherein the power level is provided at or between 5 and 15 watts.

8. (Canceled).

9. (Currently Amended) The method of Claim ~~8~~ 1, wherein the platform is a turntable operable to rotate the substrate.

10. (Original) The method of Claim 9, further comprising: rotating the turntable at a revolutions per minute rate at or between 5 revolutions per minute and 30 revolutions per minute.

11. (Previously Presented) The method of Claim 9, further comprising:

rotating the turntable at a rotational rate of revolutions per minute at or between 12 revolutions per minute and 15 revolutions per minute.

12. (Original) The method of Claim 9, wherein the turntable includes an electrically conductive material that provides an electrically conductive path to the substrate, and applying the dc signal to the substrate and applying the radio frequency signal to the substrate include applying the dc signal and the radio frequency signal to the electrically conductive material of the turntable.

13. (Previously Presented) The method of Claim 12, wherein the dc signal and the radio frequency signal are applied to the electrically conductive material of the turntable using a commutator.

14. (Previously Presented) The method of Claim 12, wherein the dc signal and the radio frequency signal are applied to the electrically conductive material of the turntable using an electrically conductive brush.

15. (Original) The method of Claim 8, wherein the platform is included as part of the vacuum chamber.

16. (Original) The method of Claim 8, wherein the platform is a flat surface.

17. (Original) The method of Claim 8, wherein the platform includes a horizontal surface.

18.-23. (Canceled)

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24. (Original) The method of Claim 8, wherein the platform includes an electrically conductive material.

25. (Original) The method of Claim 8, wherein the platform is a conductive plate.

26. (Canceled)

27. (Previously Presented) The method of Claim 1, further comprising:

mixing the dc signal and the radio frequency signal to generate a mixed signal, and wherein the dc signal and the radio frequency signal includes applying the mixed signal to the substrate.

28. (Original) The method of Claim 27, wherein the mixing the dc signal and the radio frequency signal includes mixing a negative dc signal and the radio frequency signal.

29. (Original) The method of Claim 27, further comprising:

balancing the mixed signal by minimizing the standing wave reflected power.

30. (Original) The method of Claim 29, wherein minimizing the standing wave reflected power is achieved using a manual control.

31. (Original) The method of Claim 29, wherein minimizing the standing wave reflected power is achieved using an automatic control.

32. (Previously Presented) The method of Claim 1, further comprising:

positioning the evaporation source relative to the substrate.

33. (Previously Presented) The method of Claim 32, wherein positioning the evaporation source includes positioning the evaporation source a distance from the substrate.

34. (Previously Presented) The method of Claim 33, wherein the distance is at or between 0.1 inches and 6 inches when the depositant in the evaporation source is to be deposited as a base layer.

35. (Previously Presented) The method of Claim 34, wherein the distance is at or between 2.75 inches and 3.25 inches when the depositant in the evaporation source is to be deposited as the base layer.

36. (Previously Presented) The method of Claim 33, wherein the distance is at or between 0.1 inches and 6 inches when the depositant in the evaporation source is to be deposited as a transition layer.

37. (Previously Presented) The method of Claim 36, wherein the distance is at or between 2.75 inches and 3.25 inches when the depositant in the evaporation source is to be deposited as the transition layer.

38. (Previously Presented) The method of Claim 33, wherein the distance is at or between 0.1 inches and 6 inches when the depositant in the evaporation source is to be deposited as a working layer.

39. (Previously Presented) The method of Claim 38, wherein the distance is at or between 2.0 inches and 2.5 inches when the depositant in the evaporation source is to be deposited as the working layer.

40. (Previously Presented) The method of Claim 1, further comprising:

positioning the evaporation source relative to the substrate;

positioning a second depositant, which is made of the same material as the depositant, in a second evaporation source within the vacuum chamber; and

positioning the second evaporation source relative to the substrate.

41. (Previously Presented) The method of 40, further comprising positioning the evaporation source a distance from the second evaporation source.

42. (Previously Presented) The method of Claim 41, wherein the distance is at or between 0.1 inches and 6 inches when the depositant in the evaporation source is to be deposited as a base layer.

43. (Previously Presented) The method of Claim 42, wherein the distance is at or between 3.0 inches and 4.0 inches when the depositant in the evaporation source is to be deposited as the base layer.

44. (Previously Presented) The method of Claim 41, wherein the distance is at or between 0.1 inches and 6 inches when the depositant in the evaporation source is to be deposited as a transition layer.

45. (Previously Presented) The method of Claim 44, wherein the distance is at or between 3.0 inches and 4.0 inches when the depositant in the evaporation source is to be deposited as the transition layer.

46. (Previously Presented) The method of Claim 41, wherein the distance is at or between 0.1 inches and 6 inches when the depositant in the evaporation source is to be deposited as a working layer.

47. (Previously Presented) The method of Claim 46, wherein the distance is at or between 2.5 inches and 3.0 inches when the depositant in the evaporation source is to be deposited as the working layer.

48. (Previously Presented) The method of Claim 1, further comprising:

an array of substrates, and the substrate is provided as one of the array of substrates;

positioning the evaporation source relative to outwardly facing surfaces of the array of substrates;

positioning a second depositant in a second evaporation source within the vacuum chamber; and

positioning the second evaporation source relative to inwardly facing surfaces of the array of substrates.

49. (Previously Presented) The method of 48, wherein the total mass of the second depositant is 20 to 80 percent less than the total mass of the depositant.

50. (Previously Presented) The method of 49, wherein the total mass of the second depositant is 40 to 50 percent less than the total mass of the depositant.

51. (Canceled)

52. (Previously Presented) The method of Claim 1, further comprising:

positioning a second depositant in a second evaporation source within the vacuum chamber before reducing the initial pressure in the vacuum chamber to at or below 4 milliTorr; and

heating the second depositant to at or above the melting point of the second depositant, whereby a second plasma is generated in the vacuum chamber, the second plasma includes a mixture of positively charged second depositant ions and negativel charged electrons, and the second depositant ions are plated on the threaded surface of the substrate.

53. (Original) The method of Claim 52, wherein the depositant forms a base layer on the substrate and the second depositant forms a working layer on the base layer.

54. (Previously Presented) The method of Claim 52, further comprising:

positioning a third depositant in a third evaporation source within the vacuum chamber before reducing the initial pressure in the vacuum chamber to at or below 4 milliTorr; and

heating the third depositant to a temperature at or above the melting point of the third depositant, whereby a third plasma is generated in the vacuum chamber, the third plasma includes a mixture of positively charged third

depositant ions and negatively charged electrons, and the third depositant ions are plated on the substrate.

55. (Original) The method of Claim 54, wherein the depositant forms a base layer on the substrate, the second depositant forms a transition layer on the base layer, and the third depositant forms a working layer on the transition layer.

56. (Previously Presented) The method of Claim 1, wherein the radio frequency signal is provided at a frequency above one kilohertz range.

57. (Previously Presented) The method of Claim 1, wherein the radio frequency signal is provided at a frequency above one megahertz range.

58. (Original) The method of Claim 1, wherein the radio frequency signal is provided at a frequency of 13.56 kilohertz.

59. (Original) The method of Claim 1, wherein the radio frequency signal is provided at a frequency reserved for industrial applications.

60. (Original) The method of Claim 1, further comprising:

cleaning the substrate to remove foreign materials and oils.

61. (Original) The method of Claim 1, further comprising:

cleaning the substrate to achieve white metal clean.

62. (Original) The method of Claim 1, further comprising:

cleaning the substrate before positioning the substrate within the vacuum chamber.

63.-66. (Canceled)

67. (Original) The method of Claim 62, wherein the cleaning the substrate includes abrasively blasting the substrate.

68. (Original) The method of Claim 1, wherein the gas is introduced through a control valve.

69. (Canceled)

70. (Original) The method of Claim 1, wherein the depositant is a metal alloy.

71. (Original) The method of Claim 1, wherein the depositant is gold.

72. (Original) The method of Claim 1, wherein the depositant is titanium.

73. (Original) The method of Claim 1, wherein the depositant is chromium.

74. (Original) The method of Claim 1, wherein the depositant is nickel.

75. (Original) The method of Claim 1, wherein the depositant is silver.

76. (Original) The method of Claim 1, wherein the depositant is tin.

77. (Original) The method of Claim 1, wherein the depositant is indium.

78. (Original) The method of Claim 1, wherein the depositant is lead.

79. (Original) The method of Claim 1, wherein the depositant is copper.

80. (Original) The method of Claim 1, wherein the depositant is palladium.

81. (Original) The method of Claim 1, wherein the depositant is a silver/palladium metal alloy.

82. (Original) The method of Claim 1, wherein the depositant is carbon.

83.-84. (Canceled)

85. (Original) The method of Claim 1, wherein the depositant is a metal carbide.

86. (Original) The method of Claim 1, wherein the depositant is a metal nitride.

87. (Original) The method of Claim 1, wherein the depositant is provided in a form from the class consisting of a pellet, a wire, a granule, a powder, a ribbon, and a strip.

88. (Original) The method of Claim 1, wherein the gas is an inert gas.

89. (Canceled)

90. (Original) The method of Claim 1, wherein the gas is argon.

91. (Original) The method of Claim 1, wherein the gas is xenon.

92. (Original) The method of Claim 1, wherein the gas is radon.

93. (Original) The method of Claim 1, wherein the gas is helium.

94. (Original) The method of Claim 1, wherein the gas is neon.

95. (Original) The method of Claim 1, wherein the gas is krypton.

96. (Original) The method of Claim 1, wherein the gas is oxygen.

97. (Original) The method of Claim 1, wherein the gas is nitrogen.

98. (Original) The method of Claim 1, wherein the gas is noncombustible.

99. (Original) The method of Claim 1, wherein the plasma includes gas ions and depositant ions.

100. (Original) The method of Claim 99, wherein the gas ions and the depositant ions of the plasma include positively charged ions.

101. (Original) The method of Claim 99, wherein the gas ions and the depositant ions of the plasma include negatively charged ions.

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102. (Previously Presented) The method of Claim 1, wherein the gas is argon and the depositant is a metal alloy of silver/palladium, and the plasma includes argon ions and silver/palladium ions.

103. (Previously Presented) The method of Claim 1, wherein the evaporation source is a tungsten basket.

104. (Canceled)

105. (Previously Presented) The method of Claim 1, wherein the evaporation source is a coil.

106.-110. (Canceled)

111. (Previously Presented) The method of Claim 1, wherein heating the depositant includes supplying a current through the evaporation source.

112. (Previously Presented) The method of Claim 111, wherein heating the depositant includes incremental staging of the current to the evaporation source to achieve an even heat distribution in the depositant.

113. (Original) The method of Claim 111, wherein the current is an alternating current.

114. (Previously Presented) The method of Claim 113, wherein the amplitude of the alternating current is controllably increased such that the depositant is uniformly heated and melted.

115.-116. (Canceled)

117. (Original) The method of Claim 1, wherein the method does not include the addition of a magnet to produce a magnetic field near the substrate that affects the attraction of the ions of the plasma to the substrate.

118. (Previously Presented) The method of Claim 1, wherein the plasma forms a layer on the substrate to create the plated threaded surface at a thickness at or between 500 and 20,000 Angstroms.

119. (Previously Presented) The method of Claim 1, wherein the plasma forms a layer on the substrate to create the plated threaded surface at a thickness at or between 3,000 and 10,000 Angstroms.

120. (Previously Presented) The method of Claim 1, wherein the plasma forms a layer on the substrate to create the plated threaded surface that can be controlled to a thickness of 500 Angstroms.

121. (Previously Presented) The method of Claim 1, further comprising:

backsputtering the substrate before heating the depositant to a temperature at or above the melting point of the depositant.

122. (Previously Presented) The method of Claim 1, further comprising:

performing backsputtering before heating the depositant that includes:

reducing the pressure in the vacuum chamber to at or below 100 milliTorr;

flowing a gas through the vacuum chamber at a rate to raise the pressure in the vacuum chamber to at or between 20 milliTorr and 100 milliTorr;

applying a dc signal to the substrate at a voltage amplitude at or between 1 volt and 4000 volts; and

applying a radio frequency signal to the substrate at a power level at or between 1 watt and 50 watts.

123. (Previously Presented) The method of Claim 122, wherein reducing the pressure in the vacuum chamber includes reducing the pressure in the vacuum

chamber to at or below 50 milliTorr, and wherein flowing the gas through the vacuum chamber at a rate to raise the pressure in the vacuum chamber to at or between 20 milliTorr and 100 milliTorr includes flowing the gas through the vacuum chamber at a rate to raise the pressure to at or between 20 milliTorr and 50 milliTorr.

124. (Original) The method of Claim 122, wherein applying the dc signal to the substrate at a voltage amplitude at or between 1 volt and 4000 volts includes applying a dc signal to the substrate at a voltage amplitude at or between 100 volts and 250 volts.

125. (Previously Presented) The method of Claim 122, wherein applying the radio frequency signal to the substrate at a power level at or between 1 watt and 50 watts includes applying the radio frequency signal at a power level at or between 5 and 15 watts.

126. (Original) The method of Claim 122, wherein applying the dc signal to the substrate includes applying the dc voltage at a negative polarity.

127. (Original) The method of Claim 122, wherein backsputtering is performed for a period of time at or between 30 seconds and one minute.

128. (Original) The method of Claim 122, wherein backsputtering is performed until the rate of visible microarcing is significantly reduced.

129. (Currently Amended) A method for plasma plating comprising:

positioning a substrate with a threaded surface on a platform within a vacuum chamber, wherein an inwardly facing surface of the substrate faces a center of the platform and an outwardly facing surface of the substrate faces an edge of the platform and wherein the platform further comprises a turntable operable to rotate the substrate;

positioning a first depositant in the vacuum chamber;

positioning a second depositant in the vacuum chamber, wherein the first depositant and the second depositant are arranged so that rotation of the turntable moves the inwardly facing surface of the substrate past the first depositant at a first time and the outwardly facing surface of the substrate past the second depositant at a second time;

reducing an initial pressure in the vacuum chamber to at or between 0.5 milliTorr and 1.5 milliTorr;

applying a negative dc signal to the substrate at a voltage amplitude at or between 500 volts and 750 volts;

applying a radio frequency signal to the substrate at a power level at or between 1 watt and 50 watts; and

heating the depositant to a temperature at or above the melting point of the depositant, whereby a plasma is generated in the vacuum chamber, the plasma includes a mixture of positively charged depositant ions and negatively charged electrons, and the depositant ions are plated on the threaded surface of the substrate to create a plated threaded surface, the inwardly facing surface and the outwardly facing surface of the substrate ~~to create plated surfaces~~, and wherein the plated threaded surface reduces galling between the plated threaded surface and a surface of a mated component.

130.-131. (Canceled)

132. (Previously Presented) The method of Claim 129, wherein the power level is provided.

133.-150 (Canceled)

151. (Previously Presented) A method for plasma plating comprising:

positioning a substrate with a threaded surface on a platform within a vacuum chamber, wherein an inwardly facing surface of the substrate faces a center of the platform and an outwardly facing surface of the substrate faces an edge of the platform and wherein the platform further comprises a turntable operable to rotate the substrate;

positioning a first depositant in a first set of filaments within the vacuum chamber, the depositant includes at least a first metal;

positioning a second depositant in a second set of filaments within the vacuum chamber, wherein the first set and second set of filaments are arranged so that rotation of the turntable moves the inwardly facing surface of the substrate past the first set of filaments at a first time and the outwardly facing surface of the substrate past the second set of filaments at a second time;

reducing an initial pressure in the vacuum chamber to at or below 4 milliTorr;

flowing a gas through the vacuum chamber at a rate to raise the pressure in the vacuum chamber to at or between 0.1 milliTorr and 4 milliTorr;

applying a negative dc signal to the substrate at a voltage amplitude at or between one to 1,500 volts;

applying a radio frequency signal to the substrate at a power level at or between 1 watt and 50 watts; and

heating the first depositant and the second depositant to temperatures at or above their respective melting points, whereby a plasma is generated in the vacuum chamber, the plasma includes a mixture of positively charged first and second depositant ions and negatively charged electrons, and the first and second depositant ions are plated on the threaded surface, the inwardly facing surface and the outwardly facing surface of the substrate to create plated

surfaces, and wherein the plated surfaces reduce galling between the plated surfaces and mating surfaces of a mated component.

Padgett, Marianne

Attachment to interview Summary of 3/7/2007

From: Wang, George Y. [GWang@hunton.com]
Sent: Wednesday, March 07, 2007 4:18 PM
To: Padgett, Marianne
Cc: Wang, George Y.
Subject: Proposed claims for App No. 09/427,775

Examiner Padgett,

Per our earlier discussion, attached is a pdf of the proposed amendments. These changes should place the application incondition for allowance. Please feel free to contact me if you have any questions.

Sincerely,
George

Home | VCard | Bio

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